22. (**NEW**) An isolated, enriched or purified nucleic acid molecule comprising a nucleotide sequence that

(a) encodes a polypeptide that differs from the polypeptide having the amino acid sequence set forth in SEQ ID NO:36 by lacking one or more, but not all, of the following segments of amino acid residues: 1-58, 59-294 or 295-459;

(b) is the complement of the nucleotide sequence of (a);

(c) encodes a polypeptide having at least one of amino acid residues 1-58, 59-294 or 295-459 of SEQ ID NO:36; or

(d) is the complement of the nucleotide sequence of (c).--

I. REMARKS

As per the Examiner's request, the title has been amended. Specifically, Applicants have adopted the Examiner's suggestions from paragraph 1 of the Office Action. The new title is "Nucleic Acids Encoding BDP1 and Related Products".

Claims 21 and 22 have been added. Support for new claim 21 can be found, *inter alia*, throughout the disclosure and claims as filed as well as specifically in originally filed claim 18. Support for new claim 22 can be found, *inter alia*, throughout the disclosure and claims as filed as well as specifically on page 73, lines 16-29 and originally filed claim 18. No new matter has been added by the addition of these new claims.

Claims 1 and 7 have been canceled without prejudice to or disclaimer of the subject matter contained therein. Claims 2-6, 8 and 18-20 have been amended to more particularly point out and distinctly claim that which the Applicants regard as the invention. Support for the amendment to the claims can be found, *inter alia*, throughout the disclosure, claims and drawings as originally filed as well as specifically for the following subject matter: support for high stringency conditions of hybridization can be found in the disclosure at page 18, line 22-page 19, line 16; and support for recitation of 35 and 40 contiguous amino acid residues may be found specifically at page 11, line 12-14. The amendments add no new matter. Claims 2-6, 8 and 18-22 will be pending after entry of this amendment.

Applicants submit herewith a substitute sequence listing and an amendment to the specification directing into entry the content of the substitute specification. Applicants also submit herewith a Computer Readable Form (CRF) as required under § 1.824 (a) to correct

defects which were inadvertently typed into the previously submitted paper copy and computer readable disk of the Sequence Listing. The substitute pages of the specification are identical in substance to the CRF. The amended Sequence Listing is provided in ASCII text on the accompanying substitute diskette and the Statement Under 37 C.F. R. § 1.821 (f) is also provided. The submission includes no new matter.

In paragraph 4 of the Office Action, the Examiner indicated that the specification and claims do not comply with 37 C.F.R. § 1.821(d) of the Sequence Rules and Regulations in that reference is not made throughout the specification and claims to the assigned identifier of each sequence. Applicants have amended the specification and claims to overcome the rejection. As mentioned above, a copy of a substitute sequence listing has been submitted with this amendment.

Further, Applicants herein acknowledge the discrepancy between the nucleic acid and amino acid sequences as filed and the nucleic acid sequence of SEQ ID NO:35 and the amino acid sequence of SEQ ID NO:36. Applicant's corrections to the sequence listings removes this discrepancy. Specifically, SEQ ID NO:35 is corrected to replace "C" in position 69 with "G" and replace "G" in position 1183 with "C". Additionally, SEQ ID NO:36 is corrected to replace "Pro" in position 9 with "Arg" for Arginine and "Arg" in position 380 has been replaced with "Ser" for Serine. Applicants respectfully submit that amino acids in positions 9 and 380 are those as submitted with the application as originally filed, as presented in Figure 3. The sequence listing submitted with this Response contains the updated listing, and Applicants respectfully request that further searches be based on the updated sequence.

I. <u>The Rejections under 35 U.S.C. § 101</u>

The Office Action rejected claims 4-6 under 35 U.S.C. § 101 as reading on a product of nature. These rejections are traversed in view of the above-given amendments to the claims. Specifically, Applicants have added --isolated or purified-- to the claimed subject matter. Applicants respectfully submit that the amended claims do not read on a product of nature. As a result, reconsideration and withdrawal of the rejections are respectfully requested.

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II. The Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 2, 7, 8, 18 and 20 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicants regard as the invention. These rejections are traversed in view of the above-given amendments to the claims and arguments or remarks presented herein.

Claim 2 was rejected, as it was allegedly not clear how a nucleic acid was enriched from a mammal. Applicants have amended the claim to delete the phrase "isolated, enriched, or purified". Reconsideration and withdrawal of the rejection are respectfully requested.

According to the Office Action, it is not clear in claims 7 and 20 what a recombinant tissue is. Claim 7 has been canceled. Claim 20 has been amended to recite a recombinant cell or recombinant tissue which comprises a nucleic acid according to the invention and a cell or tissue, wherein the nucleic acid is introduced into the cell or tissue. Applicants assert that claim 20, as amended, particularly points out and distinctly claims that which the Applicants regard as the invention. Reconsideration and withdrawal of the rejections are respectfully requested with respect to amended claim 20.

Likewise, according to the Office Action, as recited in claim 8, it is not clear what is meant by the term "recombinant nucleic acid molecule." In response thereto, Applicants have deleted "recombinant" and amended the claim to indicate that the nucleic acid molecule be produced by recombinant means. In addition, the Office Action indicated that it was unclear what the claimed invention actually was in claim 8. Applicants have amended the claim to more particularly point out and distinctly claim that which the Applicants regard as the invention. Finally, according to the Office Action, Applicants recited the wrong strand in claim 8. Applicants have amended the claim accordingly. Applicants maintain that the claim, as amended, particularly points out and distinctly claims that which the Applicants regard as the invention. On that basis, reconsideration and withdrawal of the rejections are respectfully requested.

The Office Action rejected Claim 18 under 35 U.S.C. § 112, second paragraph. First, according to the Office Action, the term "naturally occurring" polypeptide in part (c) was not clear. Applicants have amended the claim to recite a polypeptide according to SEQ ID NO:36, the assigned amino acid sequence identifier for BDP-1. Second, the Office Action rejected the claim (in part 18(d)) as allegedly confusing because the entire polypeptide can not be the same

except that it lacks one or more of the recited domains. New claim 21 which claims subject matter formerly found in claim 18(d) has been rewritten to claim a nucleic acid that encodes a polypeptide that differs from the polypeptide having the full length sequence according to SEQ ID NO:36 in that it lacks at least one of the recited domains. Reconsideration and withdrawal of the rejections with respect to the claims as amended and added are respectfully requested.

III. The Rejections Under 37 CFR § 1.75(c)

The Office Action rejected Claim 3 under 37 CFR § 1.75(c), as being in improper dependent form for failing to further limit the subject matter of the independent claim. According to the suggestions presented in the Office Action, Applicants have canceled claim 1, the claim upon which claim 3 was dependent, and rewritten claim 3 in independent form. Reconsideration and withdrawal of the rejection are respectfully requested.

IV. The Rejections Under 35 U.S.C. § 112, First Paragraph

The Office Action rejected Claim 18(d) under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that at the time the application was filed the Applicants had possession of the claimed invention. According to the Office Action, the specification only teaches one BDP-1 polypeptide, and the full length polypeptide representative of polypeptides lacking one or more structural domains is not represented by the full length polypeptide. Applicants respectfully disagree and traverse the rejection.

The Written Description requirement requires that an Applicant's specification must convey with reasonable clarity to those skilled in the art that Applicants were in possession of the claimed invention at the filing date of the application; and that the invention, in this context is whatever is claimed (*see* MPEP § 2163 and Ralston Purina Co. v. far-Mar-Co., Inc, 772 F.2d 1570, 1575 (Fed.Cir. 1985) (quoting *In Re Kaslow*, 707 F.2d 1366, 1375 (Fed.Cir. 1983)). New claim 21 claims subject matter formerly found in claim 18(d). As recited in Claim 21(b), the claimed nucleic acid comprises a nucleotide sequence which encodes a polypeptide differing from the polypeptide having the full-length amino acid sequence set forth in SEQ ID NO:36 in that it lacks at least one, but not all, of the domains selected from the group consisting of an N-terminal domain, a catalytic domain and a C-terminal domain.

The specification conveys with reasonable clarity to those skilled in the art that Applicants were in possession of the domains of the claimed invention. For example, page 5, lines 13-18 of the specification, as filed, provides:

> ...The N-terminal sequence was homologous with the N-terminus of the cyclase-associated CAP protein. The last sequence with approximately 20 amino acids at the C-terminus was homologous to the PTPase PEST family and the cytoplasmic tail sequence of MHC antigen protein.

Further, the specification provides that the putative catalytic domain stretches from amino acids 59 to 294 and contains all of the highly conserved sequence motifs found in most protein tyrosine phosphatases (page 73, lines 16-28). Thus, the specification conveys with reasonable clarity that Applicants were in possession of the delimitations of the C-terminal, the N-terminal and the catalytic domains of BDP-1 and the domains claimed in claim 21. Reconsideration and withdrawal of the rejections are respectfully requested.

The Office Action rejected claims 1-3 and 6-8 under 35 U.S.C. § 112, first paragraph, because the claims do not allegedly teach how to make and/or use the claimed invention. According to the rejection, a polypeptide having less than the minimum number of amino acids in the catalytic domain (at least 100 according to the Office Action) would lack residues essential for functional activity. As such, the Office Action alleges it would require undue experimentation for one skilled in the art to make and/or use the claimed invention, a nucleic acid encoding less than 100 contiguous amino acids. Applicants respectfully disagree; on that basis, the rejections are respectfully traversed.

Claims 1 and 7 have been canceled. As amended, claims 2 and 3 are drawn to an isolated nucleic acid molecule comprising a nucleotide sequence which encodes at least 35 contiguous amino acid of the full-length sequence of SEQ ID NO:36. Claims 4 and 5 are drawn to a nucleic acid probe comprising a nucleic acid molecule which encodes at least 35 or 40, respectively, contiguous amino acids of the amino acid sequence of SEQ ID NO:36. Claims 6 and 8 are drawn to a vector and nucleic acid produced by recombinant means, respectively, each of which include a nucleotide sequence encoding a polypeptide having the amino acid sequence set forth in SEQ ID NO:36.

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The specification provides sufficient guidance to enable one skilled in the art to use the claimed nucleic acid molecule.[1] Any enabled use that would reasonably correlate with the entire scope of a claim is sufficient to preclude a rejection for nonenablement based on "how to use" (*see* MPEP § 2164.01(c)). Contrary to the assertion in the Office Action, knowledge of (catalytic) function is not essential to enable one skilled in the art to use the claimed invention. The claims are drawn to a nucleic acid which encodes polypeptides having the amino acid sequence set forth in SEQ ID NO:36, as well as partial sequences comprising 35 and 40 contiguous amino acids of SEQ ID NO:36. As a single example of use only, as provided in the disclosure at page 44 et seq., the nucleic acids of the present invention may be used by one skilled in the art to probe an appropriate chromosomal library to obtain another nucleic acid of interest (*see*, for example, Sambrooke et al.). This single recitation of use shows that the specification provides specific guidance to enable one skilled in the art to use the entire scope the claimed invention (a nucleic acid comprising a nucleotide sequence encoding a polypeptide comprising at least 35, 40 or more contiguous amino acids of SEQ ID NO:36) of claims 2-3, 6 and 8. Reconsideration and withdrawal of the rejection under 35 U.S.C. § 112, first paragraph, with respect to claims 2-3, 6 and 8 are respectfully requested.

V. The Rejections Under 35 U.S.C. § 102

The Office Action rejected Claims 1, 2, 4-7 and 18-20 under 35 U.S.C. § 102(b) as being anticipated by Hillier et al. (accession number R54222). This rejection is respectfully traversed with respect to claims 2, 4-6 and 18-20.

Independent claims 18, 21 and 22 (all of which together recite the subject matter formerly found in claim 18) are drawn to an isolated, enriched or purified nucleic acid comprising a nucleotide sequence that encodes a polypeptide. In claim 18, the recited polypeptide has the full-length amino acid sequence set forth in SEQ ID NO:36, the nucleotide sequence encodes the

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[1] As noted above, the Office Action stresses that the claimed nucleic acid encodes less than the essential number of polypeptides required for polypeptide function (e.g., catalytic). That is, the Office Action implies that since the encoded claimed polypeptide will not be functional, there is not sufficient guidance in the specification to enable one skilled in the art to use the claimed nucleic acid encoding a 35 or 40 amino acid polypeptide. Applicants respectfully submit that the Office Action's focus on function is misdirected and that the "how to use" component of the enablement clause has been satisfied in the instant case, as provided.

complement of the sequence set forth in SEQ ID NO:36 or the nucleotide sequence hybridizes under highly stringent conditions to the nucleic acid molecule which encodes a full-length amino acid sequence having the amino acid sequence set forth in SEQ ID NO:36. In claim 21, the polypeptide differs from the polypeptide having the full-length amino acid sequence set forth in SEQ ID NO:36 by lacking one or more, but not all, of the domains selected from the group consisting of an N-terminal domain, a catalytic domain and a C-terminal region. In claim 22, the polypeptide differs from the polypeptide having the amino acid sequence set forth in SEQ ID NO:36 by lacking one or more, but not all, of the following segments of amino acid residues: 1-58, 59-294 or 295-459, or the nucleotide sequence encodes a polypeptide having at least one segment of amino acid residues 1-58, 59-294 or 295-459 of SEQ ID NO:36, or a nucleotide sequence complementary to either.

The nucleotide sequence set forth in SEQ ID NO:35 encodes the polypeptide disclosed in SEQ ID NO:36; the ORF which encodes the full-length polypeptide extends from nucleotide 45 to nucleotide 1420 of SEQ ID NO:35.

Hillier et al. disclose a 418 bp EST. According to the Office Action, the 418 bp EST disclosed in Hillier et al. matches with nucleotides 2023-2414 of SEQ ID:35.

Hillier et al. do not anticipate any of claims 18, 21 or 22. The claims are drawn to a nucleic acid comprising a nucleotide sequence which encodes a polypeptide having the amino acid sequence set forth in SEQ ID NO:36, portions thereof, or a complement of the nucleotide sequence. Hillier et al. disclose an EST homologous to a portion of the 3'UTR, so the EST does not encode any part of the amino acid sequence set forth in SEQ ID NO:36. As such, Hillier et al. do not anticipate claims 18, 21 or 22. The remainder of the claims are allowable by virtue of their ultimate dependence on claims 18, 21 and 22. Reconsideration and withdrawal of the rejections with respect to claims 2, 4-6 and 18-20 are respectfully requested.

The Office Action rejected Claim 3 under 102(b) as being anticipated by Ota et al. Specifically, the Office Action indicated that Ota et al. disclose 12 contiguous amino acids of the claimed sequence set forth in Figure 3, SEQ ID NO:36. The rejection is traversed in view of the amendment to Claim 3. As indicated above, amended Claim 3 recites 35 contiguous amino acids and, as such, defines over Ota et al. On that basis, reconsideration and withdrawal of the rejection of claim 3 are respectfully requested.

The Office Action rejected claims 1-8 and 18-20 under 35 U.S.C. § 102(a) as being anticipated by Cheng et al. In view of the above-indicated amendment to the claims, this rejection is respectfully traversed.

Cheng et al. disclose a nucleic acid which encodes a protein tyrosine phosphatase. 32 contiguous amino acids of the protein in Cheng et al. allegedly match amino acids 100-132 of SEQ ID NO:36 of the present disclosed invention.

Cheng et al. do not anticipate the claims as amended. The shortest recited stretch in any of the claims is 35 contiguous amino acids, more than Cheng et al.'s alleged 32 contiguous amino acids. Accordingly, reconsideration and withdrawal of the above-mentioned rejections with respect to claims 2-6, 8 and 18-20 are respectfully requested.

The Office Action rejected claims 1-8 and 18-20 under 35 U.S.C. 1§ 02(a) as being anticipated by Kim et al. This rejection is respectfully traversed with respect to claims 2-6, 8 and 18-20.

For a reference to apply under 35 U.S.C. § 102(a), the reference: i) must have a publication date earlier than the effective filing date of the application and ii) must not be Applicants' own work. (*see* MPEP § 706.02(a)). Kim et al. was published in the November, 1996 issue of Oncogene. The effective filing date of the application, however, is that of the provisional application disclosing BDP-1, namely provisional application 60/023,485 filed August 9, 1996, upon which the present application claims priority to the claimed subject matter. The Examiner has not shown that the publication date of Kim et al is earlier than the effective filing date of the application, August 9, 1996. Furthermore, Kim et al. describe Applicants' own work. As such, Kim et al. may not be used as prior art under § 102(a), and reconsideration and withdrawal of the rejection are respectfully requested with respect to claims 2-6, 8 and 18-20.

C

CONCLUSION

In view of the above, Applicants respectfully submit that the claims are in condition of allowance. Applicants respectfully request that the Application be allowed and passed to issue. . Pursuant to 37 CFR §1.136, applicants hereby petition for a two-month extension of time. This extension of time is effective to allow timely filing of this response up to and including October 28, 1999. A check in the amount of $380.00 is enclosed herewith in connection with this petition for extension of time. If this amount is incorrect, please charge Lyon & Lyon Deposit Account No. 12-2475 for the appropriate amount. Should the Examiner believe that a telephone interview would aid in the prosecution of this application, Applicants encourage the Examiner to call the undersigned collect at (858) 552-8400.

Respectfully submitted,

Dated: October 28, 1999

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